

Service Manual

PIONEER



STEREO TURNTABLE

PL-400 ^S_{S/G}

For descriptions and adjustment methods of the D.D. motor and the mechanism employed in this model, refer to the Supplementary Service Manual (ART-467) for the PL-200, PL-255, PL-300, and PL-400 models.

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<ART-464-0>

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1. SPECIFICATIONS

Motor and Turntable

Drive System	Direct-drive
Motor	Quartz PLL Hall motor
Turntable Platter	310mm diam. aluminum alloy die-cast
Moment of Inertia	180kg-cm ² (including platter mat)
Speeds	33-1/3 and 45rpm
Wow and Flutter	Less than 0.025% (WRMS)
Signal-to-Noise Ratio	More than 75dB (DIN-B)
	(with Pioneer cartridge model PC-150)

Rotational Characteristics

Build-up Time	Within 120° rotation at 33-1/3rpm
Speed Deviation	Less than 0.002%
Speed Drift	Less than 0.00008%/h at 33-1/3rpm
	Less than 0.00003%/degree temp. change at 33-1/3rpm

Tonearm

Type	Static-balance type, S-shaped pipe arm
Effective Arm Length	221mm
Overhang	15.5mm
Usable Cartridge Weight	4g (min.) to 9g (max.)

Subfunctions

Full auto mechanism, Anti-skating force control, Stylus pressure direct-readout counterweight, Cueing device, Strobe light, Free stop hinges

Semiconductors

ICs	3
-----	---

Transistors	3
Diodes	6
Hall Elements	3

Miscellaneous

Power Requirements:

AC110-120/220-240V ~ (switchable),
50, 60Hz

Power Consumption8W

Dimensions420(W) x 96(H) x 365(D)mm
16-1/2(W) x 3-13/16(H) x 14-3/8(D)in.

Weight6.5kg/14 lb 5 oz.

PC-150 Specifications

Type	Moving magnet type
Stylus	0.5 mil diamond (PN-150)
Output Voltage	3.5mV (1kHz, 50mm/s LAT)
Tracking Force	1.7g to 2.5g (proper 2.2g)
Frequency Response	15 to 30,000Hz
Recommended Load	50kΩ +170 ~ 300pF

Accessories

EP Adapter	1
Operating Instructions (French and German furnished on model for WE)	1

NOTE:

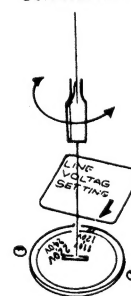
Specifications and design subject to possible modification without notice, due to improvements.

LINE VOLTAGE SELECTOR SWITCH

The line voltage selector switch is located on the top surface of the cabinet of this turntable. Before your turntable is shipped from the factory, the switch is set to the power requirements of the turntable's destination, check that it is set properly before plugging the power cord into the outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows:

1. Disconnect the power cord.
2. Provide yourself with a medium-sized screwdriver. Insert the tip of the screwdriver into the groove of the selector switch and turn it so that the power voltage marking of your area points to the white mark by the arrow on the label.

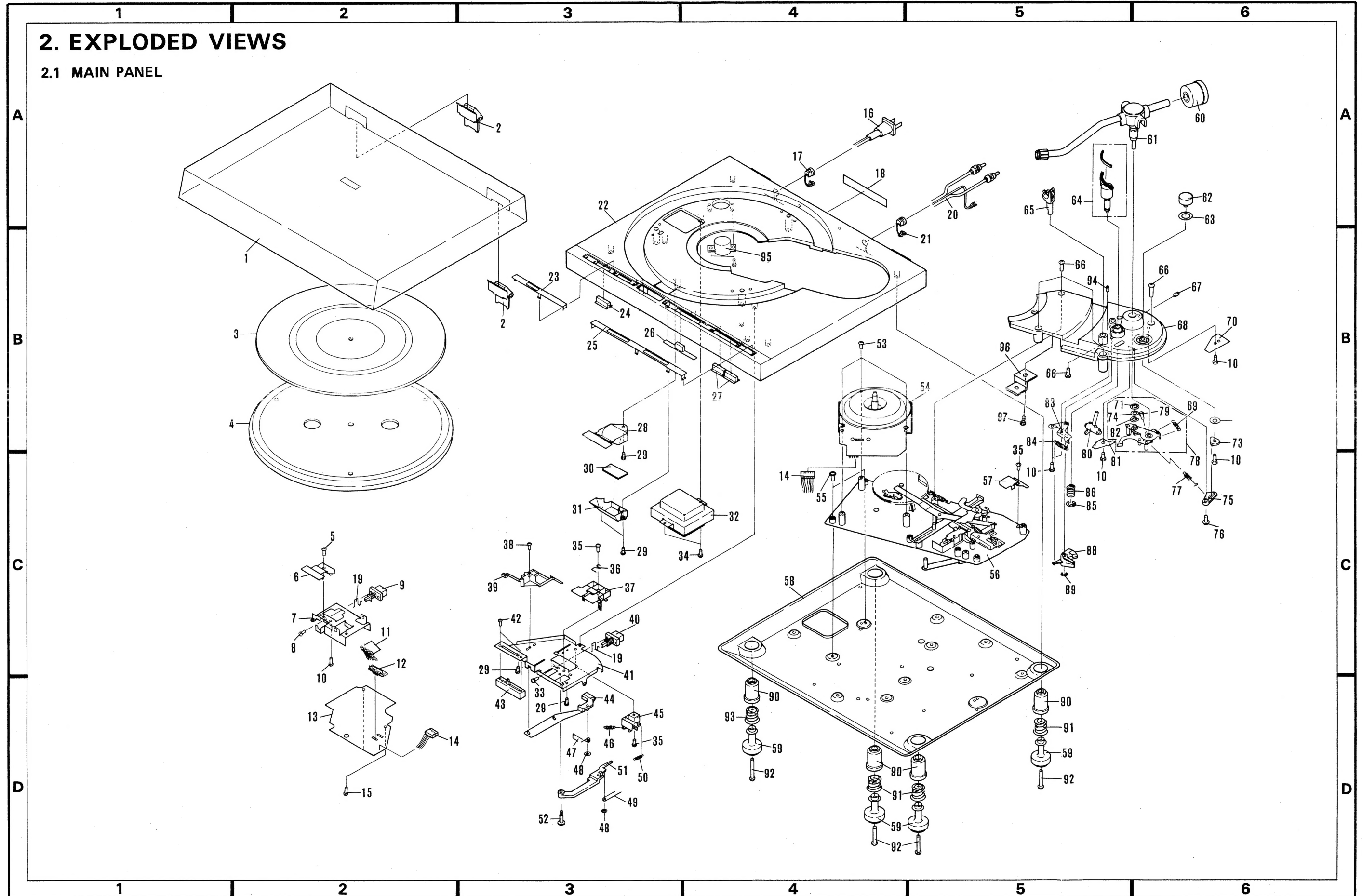
Screwdriver



S and S/G model

2. EXPLODED VIEWS

2.1 MAIN PANEL



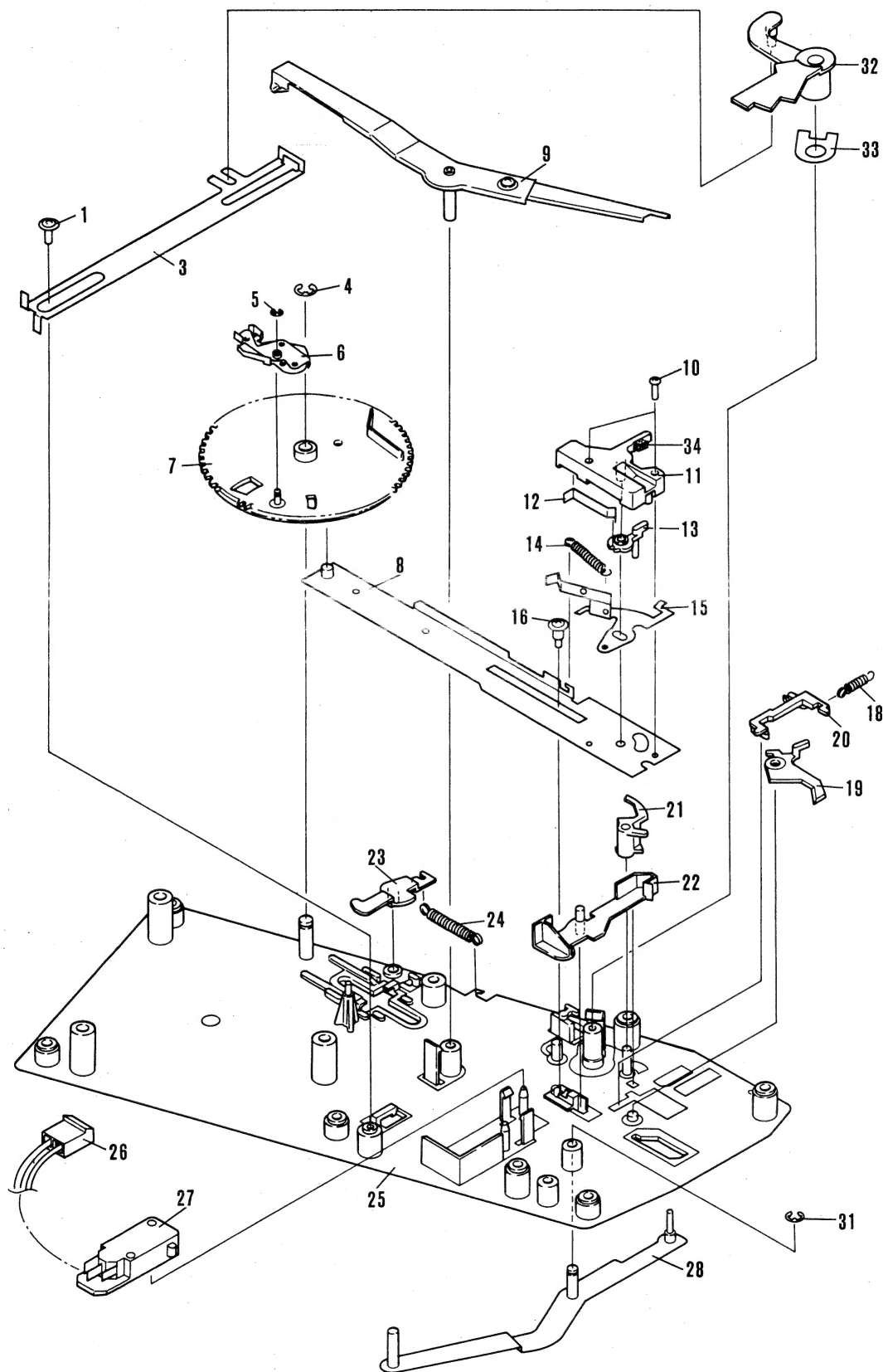
Parts List of Main Panel

NOTE:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

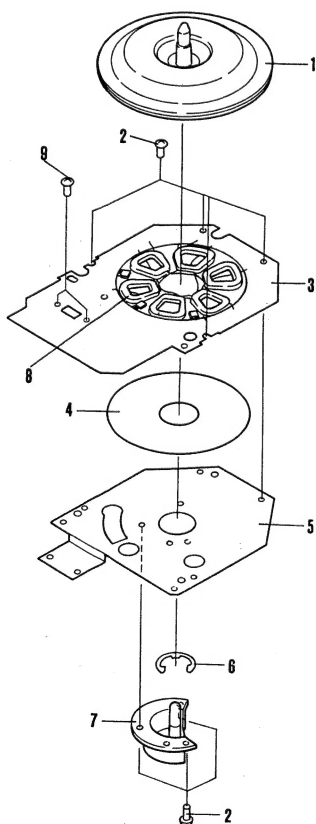
Key No.	Part No.	Description	Key No.	Part No.	Description
1.	PNV-034	Dust cover	51.	PNX-069	Lever B
2.	PXB-155	Hinge assembly	52.	PBA-102	Shaft
3.	PEB-150	Rubber mat assembly	53.	PBA-108	Brazier deltite screw 3 x 25
4.	PNR-115	Turntable platter	54.	PXM-075	Motor
5.		Deltite screw 3 x 8	55.	PBA-109	Deltite screw (in flat washer) 3 x 17
6.		Button guide C	56.		Sub panel assembly
7.		Angle	57.		Protector
8.		Semes A screw 3 x 5	58.		base
9.	PSG-020	Push switch	59.	PNX-062	Foot case
10.		Taptite P screw 3 x 8	60.	PXB-092	Weight assembly
11.	BR5504S	LED	61.	PPD-591	Arm assembly
12.		LED base	62.	PAC-045	AS knob
Δ 13.		Power supply assembly	63.	PBF-005	AS washer
14.	PDE-062	Connector assembly	64.	PXB-107	EV sheet assembly
15.		Taptite P screw 3 x 8	65.	PXB-094	Arm rest assembly
Δ 16.	PDG-004	AC power cord	66.	PBA-108	Brazier deltite screw 3 x 25
17.	REC-058	Strain relief	67.		Hexagon socket headless set screw 4 x 8
18.		Label	68.	PNX-053	Arm base
19.	PBH-261	Spring	69.	PBH-244	Spring
20.	PDE-044	OUTPUT cord	70.		OUTPUT terminal
21.	PEC-056	Strain relief	71.		CS type washer CSTW-4SUS
22.	PNX-122	Panel	72.	PBE-012	Washer
23.	PAM-062	Name plate	73.	PNX-054	AS adjusting plate
24.	PAC-043	Push button	74.		Flat washer 4
25.	PAM-063	Name plate	75.	PNX-055	Lever
26.	PAC-046	Knob	76.		Washer faced taptite P screw 3 x 10
27.	PAC-043	Push button	77.	PBH-236	Spring
28.	PNX-082	Lens	78.	PXB-097	PU plate assembly
29.		Taptite P screw 3 x 8	79.		Pan head screw 4 x 8
30.		Mirror	80.	PXT-382	Lever
31.		Lens holder	81.	PBK-042	Plate spring A
Δ 32.	PTT-087	Power transformer	82.	PNB-405	PU washer
33.		Semes A screw 3 x 5	83.	PXT-385	Plate spring B
34.		Taptite P screw 4 x 10	84.	PBH-238	EV cam spring
35.		Deltite screw 3 x 8	85.		E type washer 7
36.	PBH-260	Spring	86.	PBH-237	Spring
37.	PNX-076	Button guide B	87.		-----
38.		-----	88.	PNX-059	Cam
39.	PNX-071	Guide	89.		E type washer 3
40.	PSG-018	Push switch	90.	PEB-163	Rubber cushion
41.		Control base	91.	PBH-241	Foot spring B
42.		Pan head screw 2.6 x 5	92.	PBA-099	Screw
43.	PCS-017	Volume	93.	PBH-240	Foot spring A
44.	PNX-072	Slider	94.		Hexagon socket headless set screw 3 x 12
45.	PNX-070	Lever	Δ 95.	PSB-006	Line voltage selector
46.	PBH-245	Spring A	96.		Holder
47.	PBH-248	Spring	97.		Taptito B screw screw 3x12
48.		Push nut 3 ϕ			
49.	PBH-247	Operating spring A			
50.	PBH-246	Spring B.			

2.2 SUB PANEL



Parts List of Sub Panel

Key No.	Part No.	Description	Key No.	Part No.	Description
1.		Washer faced taptite P screw 3 x 10	21.	PNX-031	Switch plate
2.		-----	22.	PNX-030	Switch lever
3.	PNC-103	Lever	23.	PNX-035	Plate
4.		E type washer 4	24.	PBH-225	Spring
5.		E type washer 1.5	25.		Sub panel unit
6.	PYY-058	Return signal unit	△ 26.	PDE-070	Connector assembly
7.	PNX-036	Cam	△ 27.	PSF-009	Microswitch
8.	PXT-356	Plate	28.	PXT-388	START lever unit
9.	PXT-390	Detector lever	29.		-----
10.		Pan head screw 2.6 x 10	30.		-----
11.	PNX-033	EV cam	31.		E type washer 3
12.	PBK-038	Plate spring	32.	PNX-034	Cam
13.	PNX-032	Cam	33.	PBK-039	Washer
14.	PBH-224	Spring	34.	PEC-064	EV cam cushion
15.	PXT-357	START unit			
16.	PBA-103	Screw			
17.					
18.	PBH-223	Spring			
19.	PNX-028	Plate			
20.	PNX-029	Selector			

2.3 D.D. MOTOR


Key No.	Part No.	Description
1.		Rotor unit
2.		Taptite screw 3x5
3.		Control assembly
4.		Insulator
5.		Base unit
6.		EW12
7.		Shaft holder
8.		Coil
9.		Taptite screw 3x12

3. SCHEMATIC DIAGRAM AND PARTS LIST

NOTE:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω — 56 × 10¹ — 561 RD¼PS 561 J
 47kΩ — 47 × 10³ — 473 RD¼PS 473 J
 0.5Ω — 0R5 RN2H 0R5 K
 1Ω — 010 RS1P 010 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10¹ 5621 RN¼SR 5621 F

- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Parts List of D.D. motor (PXM-075)

CAPACITORS

Part No.	Symbol & Description
CEA 101M 6,3NP	C1
CKDYF 403Z 50	C2
CKDYB 681K 50	C3
CQMA 104J 50	C4
CSZA R47K 35	C5
CKDYF 103Z 50	C6, C13, C16—C18
CQMA 104K 50	C7, C20
CEA 010P 50	C8
CEA 100P 16	C9
CEA 471P 25	C10—C12
CCDCH 330J 50	C14
CCDCH 560J 50	C15
CEA 100P 25	C19

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

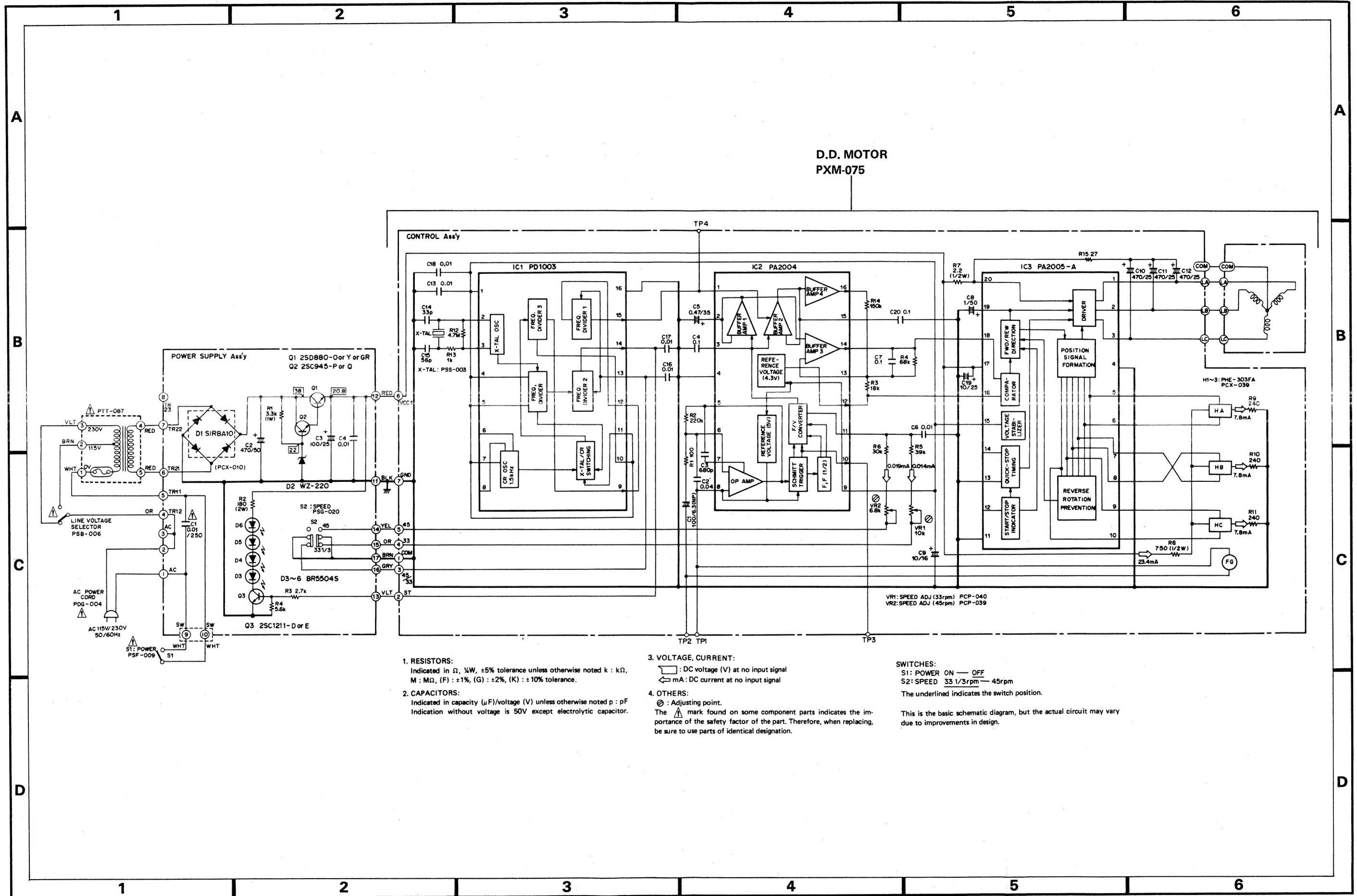
Part No.	Symbol & Description
RD¼PS □□□J	R1—R6, R9—R15
RD½PS □□□J	R7, R8
PCP-040	VR1 (10k-B)
PCP-039	VR2 (6.8k-B)

SEMICONDUCTORS AND OTHERS

Part No.	Symbol & Description
PD1003	IC1
PA2004	IC2
PA2005A	IC3
PHE-303FA	H1—H3 Hall element
PSS-003	Crystal

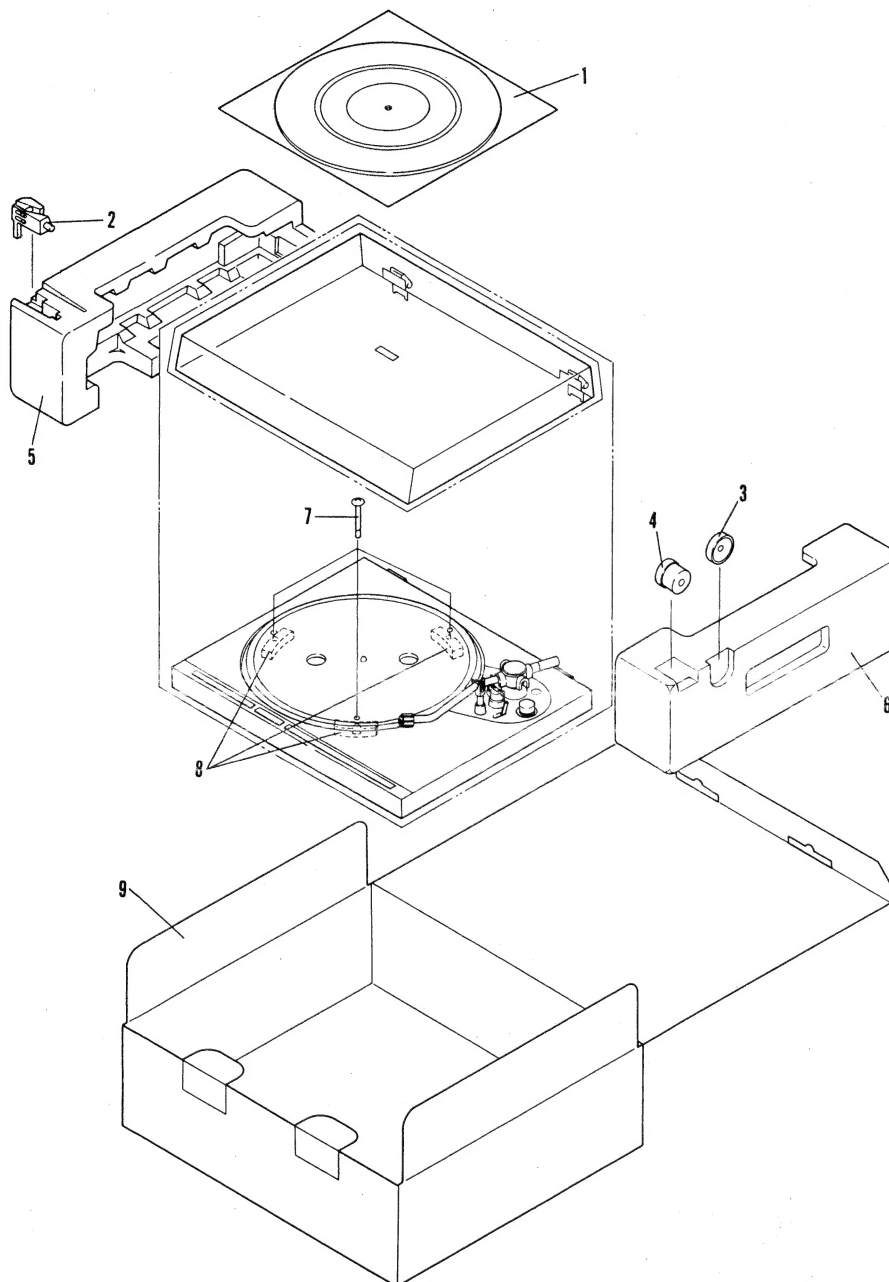
Parts List of Power Supply Assembly

Part No.	Symbol & Description
2SD880	Q1
2SC945	Q2
2SC1211	Q3
PCX-010	D1
WZ-220	D2
BR5504S	D3—D6
CKDYF 103Z 50	C4
CEA 471M 50L	C2
CEA 101M 25L	C3
Δ PCL-032	C1
RD¼PS 272J	R3
RS2PF 181J	R2
RS1PF 332J	R1
RD¼PS 562J	R4
PSG-020	S2 Speed selector
PDE-062	Connector assembly
PNX-015	Insulator
PBH-261	Push button spring





5. PACKING



Parts List

Key No.	Part No.	Description
1.	PEB-150	Rubber mat assembly
2.	PXA-792	Headshell assembly
	PXT-967	Cartridge assembly
	PBA-905	Cartridge mounting screw
3.	N93-603	45 adaptor

Key No.	Part No.	Description
4.	PXB-092	Weight assembly
5.	PHA-107	Side protector L
6.	PHA-108	Side protector R
7.	PBA-100	Screw
8.	PNX-064	Turntable protector
9.	PHG-393 (S)	Packing case
	PHG-368 (S/G)	
	PRB-133	Operating instructions
	H56-603	Vinyl bag

Service Manual

 **PIONEER®**



STEREO TURNTABLE

PL-200 S S/G

For descriptions and adjustment methods of the D.D. motor and the mechanism employed in this model, refer to the Supplementary Service Manual (ART-467) for the PL-200, PL-255, PL-300, and PL-400 models.

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1. SPECIFICATIONS

Motor and Turntable

Drive System	Direct-drive
Motor	DC servo motor
Turntable Platter	310mm diam. aluminum alloy die-cast
Moment of Inertia	150kg-cm ² (including platter mat)
Speeds	33-1/3 and 45rpm
Speed Control Range	±2%
Jwow and Flutter	Less than 0.025% (WRMS)
Signal-to-Noise Ratio	More than 75dB (DIN-B)
(with Pioneer cartridge model PC-110/II)	

Tonearm

Type	Static-balance type, S-shaped pipe arm
Effective Arm Length	221mm
Overhang	15.5mm
Adjustable Cartridge Weight	4g (min.) to 9g (max.)

Subfunctions

Auto-return mechanism, Anti-skating force control, Stylus pressure direct-readout counterweight, Cueing device, Strobe light, Free top hinges

Semiconductors

Cs	2
Transistors	2
Diodes	2
Passive Elements	3

Miscellaneous

Power Requirements:

S, S/G models AC110-120/220-240V ~ (switchable), 50, 60Hz

Power Consumption 7W

Dimensions 420(W) x 96(H) x 365(D)mm
16-1/2(W) x 3-13/16(H) x 14-3/8(D)in.

Weight 6kg/13 lb 4 oz

PC-110/II Specifications

Type	Moving magnet type
Stylus	0.5 mil diamond (PN-110/II)
Output Voltage	3.5mV (1kHz, 50mm/s LAT)
Tracking Force	1.5g to 2.5g (proper 2.2g)
Frequency Response	1.5 to 25,000Hz
Recommended Load	50kΩ +170 ~ 300pF

Accessories

EP Adapter	1
Operating Instructions (French and German)	
furnished on model for WE)	1

NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

LINE VOLTAGE SELECTOR SWITCH

The line voltage selector switch is located on the top surface of the cabinet of this turntable. Before your turntable is shipped from the factory, the switch is set to the power requirements of the turntable's destination, check that it is set properly before plugging the power cord into the outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows:

1. Disconnect the power cord.
2. Provide yourself with a medium-sized screwdriver. Insert the tip of the screwdriver into the groove of the selector switch and turn it so that the power voltage marking of your area points to the white mark by the arrow on the label.

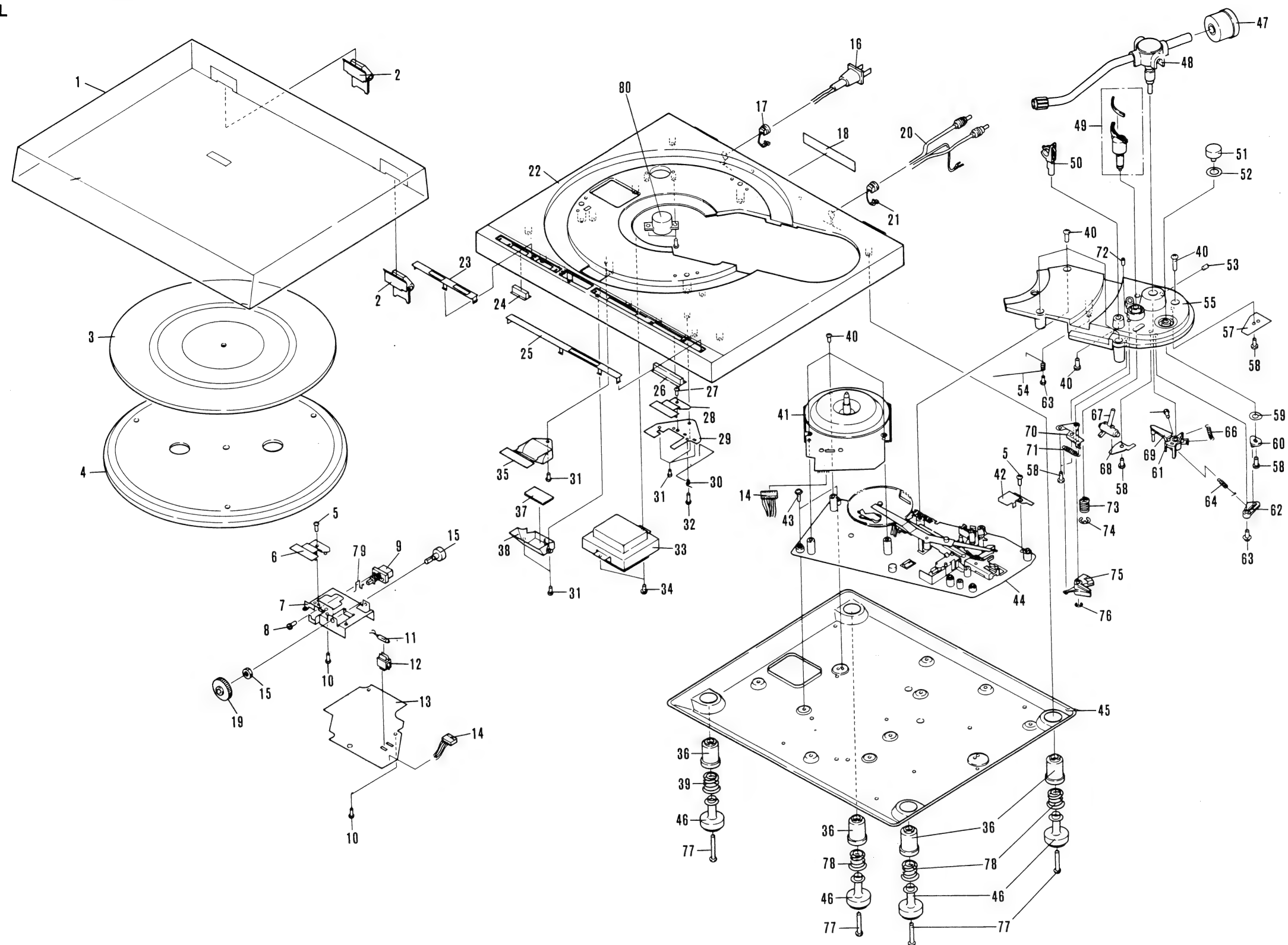
Screwdriver



S and S/G model

2. EXPLODED VIEWS

2.1 MAIN PANEL

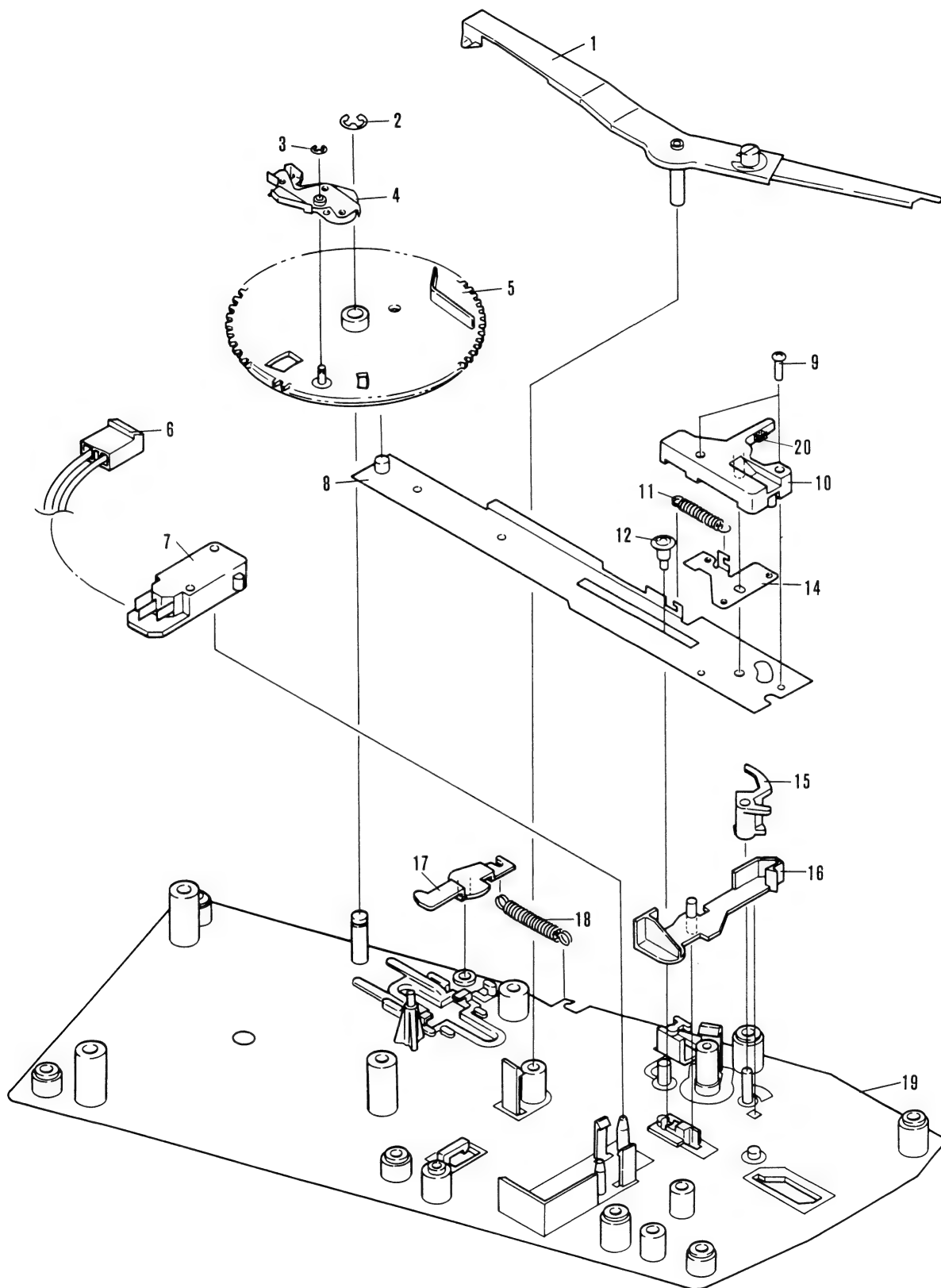


Parts List of Main Panel
NOTE:

- Parts without part number cannot be supplied.
- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Key No.	Part No.	Description	Key No.	Part No.	Description
1.	PNV-034	Dust cover	51.	PAC-045	AS knob
2.	PXB-155	Hinge assembly	52.	PBF-005	AS washer
3.	PEB-150	Rubber mat assembly	53.		Hexagon socket headless set screw
4.	PNR-114	Turntable platter	54.	PXB-152	Cut spring B assembly
5.		Deltite screw 3 x 8	55.	PNX-053	Arm base
6.		Button guide C	56.	PBA-108	Screw
7.		Angle	57.		OUTPUT terminal
8.		Semes A screw 3 x 5	58.		Taptite P screw 3 x 8
9.	PSG-020	Push switch	59.	PBE-012	Washer
10.		Taptite P screw 3 x 8	60.	PNX-054	AS adjusting plate
\triangle 11.	PEL-037	Neon lamp	61.	PNX-061	PU plate B
12.	PNX-074	Neon lamp base	62.	PNX-055	Lever
\triangle 13.		Power supply assembly	63.		Washer faced taptite P screw 3 x 10
14.	PDE-061	Connector assembly	64.	PBH-236	AS spring
15.	PCS-016	Variable resistor	65.		-----
\triangle 16.	PDG-004	AC power cord	66.	PBH-259	PU plate spring
17.	PEC-058	Strain relief	67.	PXT-382	EV lever unit
18.		Label	68.	PBK-042	EV plate spring A
19.	PAC-047	Knob	69.	PNX-060	PU plate A
20.	PDE-044	OUTPUT cord	70.	PXT-385	EV plate spring B unit
21.	PEC-056	Strain relief	71.	PBH-238	EV cam spring
22.	PNX-125	Panel	72.		Hexagon socket headless set screw 3 x 12
23.	PAM-061	Name plate	73.	PBH-237	EV spring
24.	PAC-043	Push button	74.		E type washer 7
25.	PAM-060	Name plate	75.	PNX-059	EV cam
26.	PAC-044	Button	76.		E type washer 3
27.		Deltite screw 3 x 8	77.	PBA-099	Screw
28.	PNX-052	Button guide A	78.	PBH-241	Foot spring B
29.		Button base	79.	PBH-261	Spring
30.	PXB-151	Cut spring A assembly	\triangle 80.	PSB-006	Line voltage selector
31.		Taptite P screw 3 x 8			
32.	PBA-086	Screw			
\triangle 33.	PTT-086	Power transformer			
34.		Taptite P screw 4 x 10			
35.	PNX-051	Lens			
36.	PEB-163	Rubber cushion			
37.		Mirror			
38.		Lens holder			
39.	PBH-240	Foot spring			
40.	PBA-108	Screw			
41.	PXM-074	Motor			
42.		Protector			
43.	PBA-109	Screw			
\triangle 44.		Subpanel assembly			
45.		Base			
46.	PNX-062	Foot case			
47.	PXB-092	Weight assembly			
48.	PPD-590	Arm assembly			
49.	PXB-107	EV sheet assembly			
50.	PXB-094	Arm rest assembly			

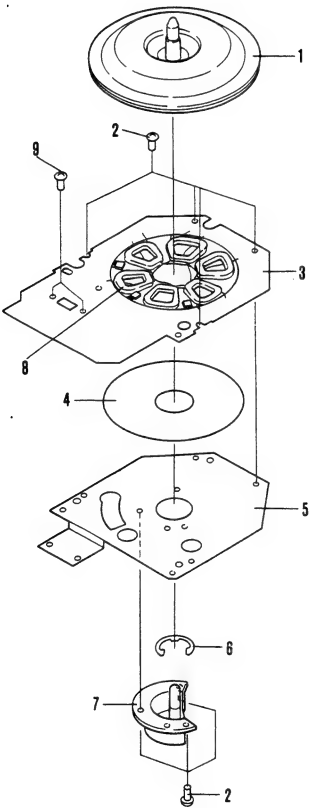
2.2 SUB PANEL



Parts List of Sub Panel

Key No.	Part No.	Description	Key No.	Part No.	Description
1.	PXT-355	Detector lever unit	11.	PBH-224	Spring
2.		E type washer 4	12.	PBA-103	Screw
3.		E type washer 1.5	13.		
4.	PYY-058	Return signal unit	14.	PNC-126	START plate
5.	PNX-036	Cam	15.	PNX-031	Switch plate
6.	PDE-070	Connector assembly	16.	PNX-030	Switch lever
7.	PSF-009	Microswitch	17.	PNX-035	Plate
8.		Plate	18.	PBH-225	Spring
9.		Pan head screw 2.6 x 10	19.		Sub panel unit
10.	PNX-033	EV cam	20.	PEC-065	EV cam cushion

2.3 D.D. MOTOR



Key No.	Part No.	Description
1.		Rotor unit
2.		Taptite screw 3x5
3.		Control assembly
4.		Insulator
5.		Base unit
6.		EW12
7.		Shaft holder
8.		Coil
9.		Taptite screw 3x12

3. SCHEMATIC DIAGRAM AND PARTS LIST

NOTE:


- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω — 56 × 10¹ — 561 RD¼PS 561 J
47kΩ — 47 × 10³ — 473 RD¼PS 473 J
0.5Ω — OR5 RN2H 050 K
1Ω — O10 RS1P 010 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10¹ 5621 RN¼SR 5621 F

- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Parts List of D.D. motor (PXM-074)

CAPACITORS

Part No.	Symbol & Description
CEA 101M 6.3NP	C1
CKDYF 403Z 50	C2
CKDYB 681Z 50	C3
CQMA 104J 50	C4
CSZA R47K 35	C5
CKDYF 103Z 50	C6, C13
CQMA 104K 50	C7
CEA 010P 50	C8
CEA 100P 16	C9
CEA 471P 16	C10—C12

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.




RESISTORS

Part No.	Symbol & Description
RD¼PS □□□J	R1—R6, R9—R12
RD¼PS □□□J	R7, R8
PCP-040	VR1 (10k-B)
PCP-039	VR2 (6.8k-B)

SEMICONDUCTORS AND OTHERS

Part No.	Symbol & Description
PA2004	IC1
PA2005A	IC2
PHE-303FA	H1—H3 Hall element

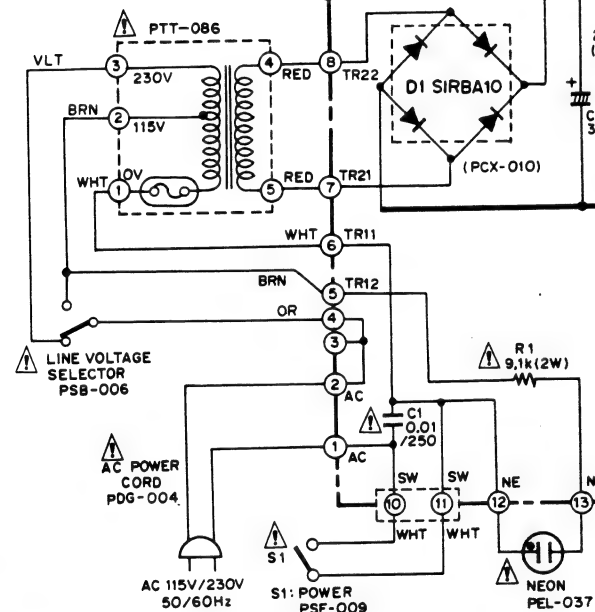
Parts List of Power Supply Assembly

Part No.	Symbol & Description
2SD880	Q1
2SD945	Q2
PCX-010	D1
WZ-177	D2
CKDYF 103Z 50	C4
CEA 331M 50L	C2
CEA 101M 25L	C3
 PCL-032	C1
 RS2PF 912J	R1
RS1PF 222J	R2
PSG-020	S2
PCS-016 5k-B	VR1
PDE-061	
 PEL-037	
PNX-015	
PBH-261	
	Speed selector
	Speed control
	Connector assembly
	Neon lamp
	Insulator
	Push button spring

D.D. MOTOR
PXM-074

CONTROL Ass'y

POWER SUPPLY Ass'y

Q1 2SD880-O or Y or GR
Q2 2SC945-P or Q

1. RESISTORS:

Indicated in Ω , $\frac{1}{4}W$, $\pm 5\%$ tolerance unless otherwise noted k : k Ω , M : M Ω , (F) : $\pm 1\%$, (G) : $\pm 2\%$, (K) : $\pm 10\%$ tolerance.

2. CAPACITORS:

Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

: DC voltage (V) at no input signal
 : mA : DC current at no input signal

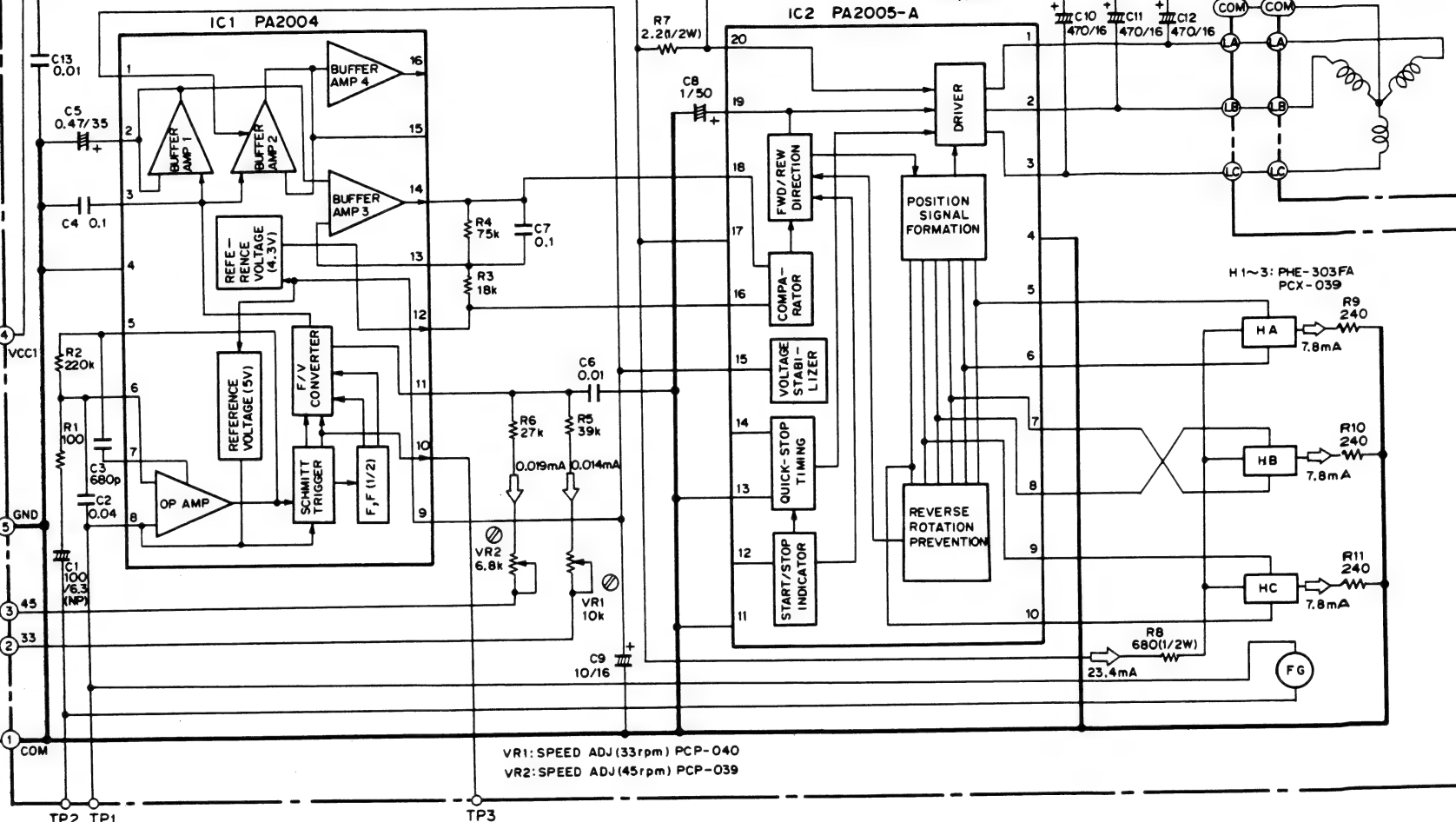
4. OTHERS:

: Adjusting point.
 The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

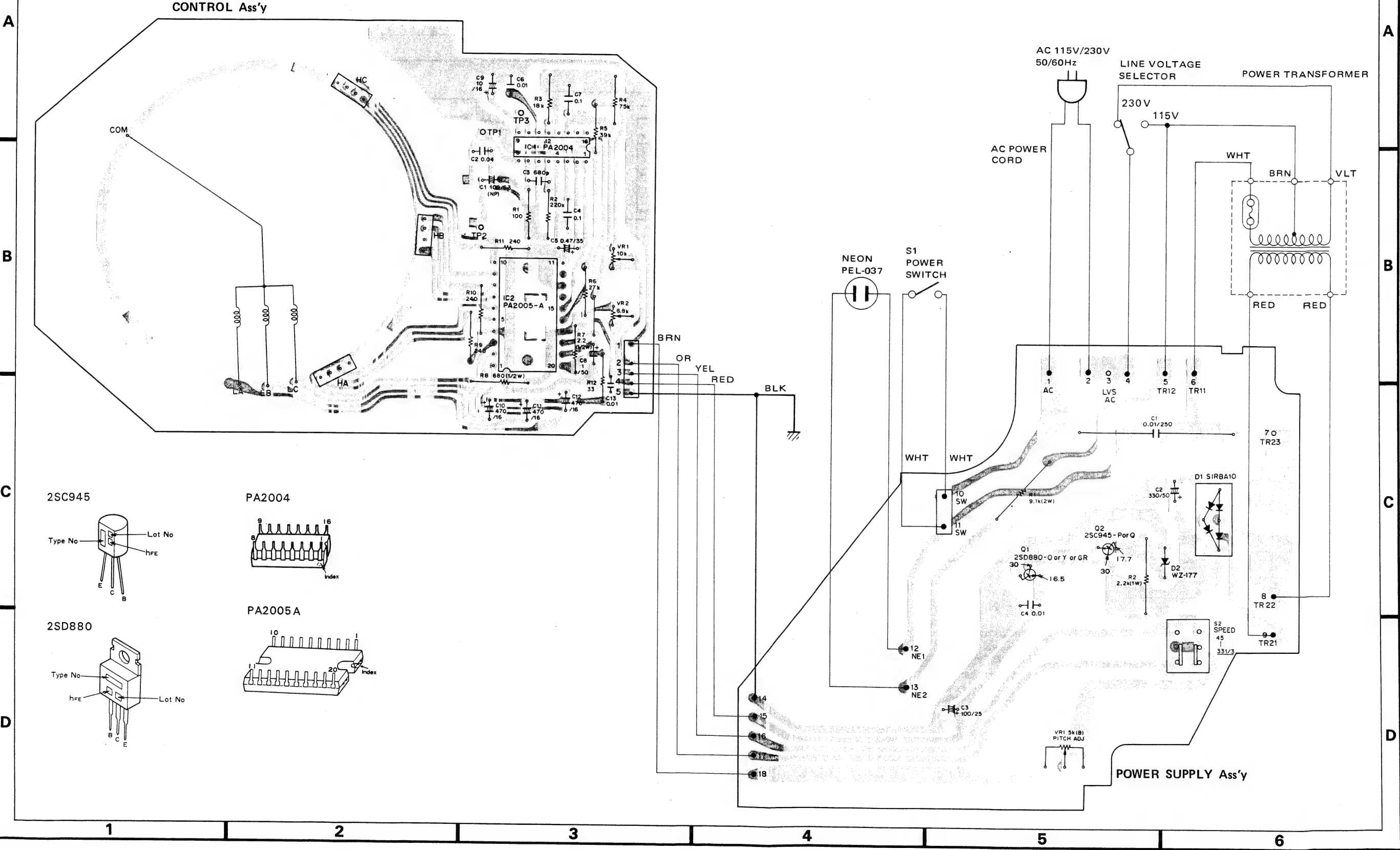
SWITCHES:

S1: POWER ON — OFF
 S2: SPEED 33 1/3rpm — 45rpm
 The underlined indicates the switch position.

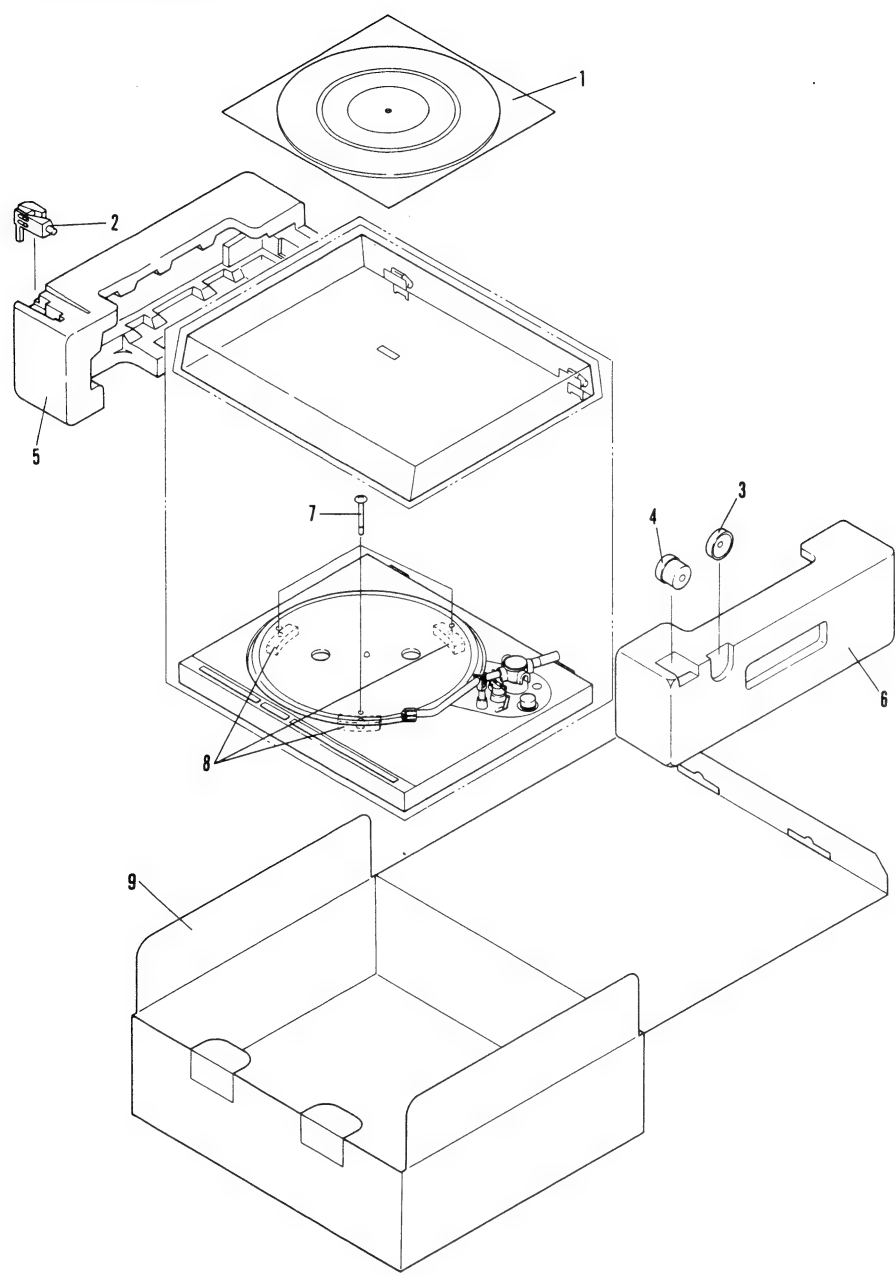
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



4. P.C.BOARD CONNECTION DIAGRAM



5. PACKING



Parts List

Key No.	Part No.	Description
1.	PEB-150	Rubber mat assembly
2.	PXA-792	Headshell assembly
	PXT-910	Cartridge assembly
	PBA-905	Cartridge mounting screw
3.	N93-603	45 adaptor

Key No.	Part No.	Description
4.	PXB-092	Weight assembly
5.	PHA-107	Side protector L
6.	PHA-108	Side protector R
7.	PBA-100	Screw
8.	PNX-064	Turntable protector
9.	PHG-386 (S)	Packing case
	PHG-366 (S/G)	
	PRB-130	Operating instructions
	H56-603	Vinyl bag

ADDITIONAL



Service Manual

STEREO TURNTABLE

PL-200
PL-200X
PL-255
PL-250
PL-260
PL-300
PL-300X
PL-400
PL-400X

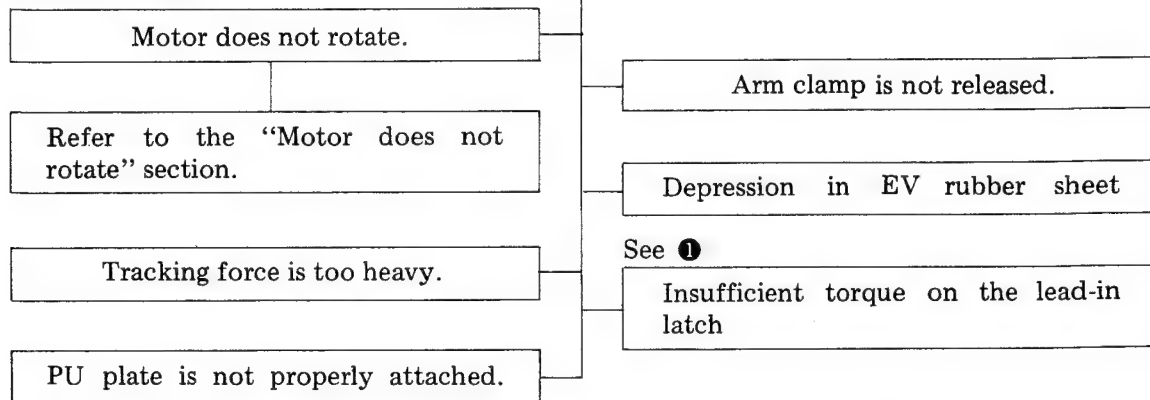
- This additional service manual describes the trouble shooting and the precautions for reassembly. For all other details, refer to the service manuals shown in the table below which have already been issued.

Model		Parts No.	Main description
PL-200/WE, WB, WP	PL-200X/WE, WB	ART-425	Exploded views and parts list
PL-200/KUT, KCT	PL-200X/KU	ART-426	"
PL-200/S, S/G		ART-461	"
PL-255/ S/G		ART-463	"
PL-255/KUT, KCT		ART-399	"
PL-250/KU		ART-486	"
PL-260/KU		ART-487	"
PL-300/S		ART-462	"
PL-300/KUT, KCT	PL-300X/KU	ART-439	"
PL-300/WE, WB, WP	PL-300X/WE, WB	ART-390	"
PL-400/S, S/G		ART-464	"
PL-400/KUT, KCT	PL-400X/KU	ART-392	"
PL-400/WE, WB, WP	PL-400X/WE, WB	ART-391	"
Additional			
PL-200, 200X, 255, 300, 300X, 400, 400X		ART-467	Circuit and mechanism descriptions

1. TROUBLE SHOOTING

Use the following directions to find the cause of each type of breakdown. Improperly adjusted units should be completely readjusted.

☆ 1.1 DOES NOT LEAD IN



NOTE:
Indicated ☆ mark applicable to the PL-255, PL-260, PL-400, and PL-400X.

Procedure for dealing with item ①

As shown in figure 1-1, if the force required to turn over the lead-in latch is less than 100g at a point 13mm from the center, bend the click leaf spring toward ① until the force is 100–250g.

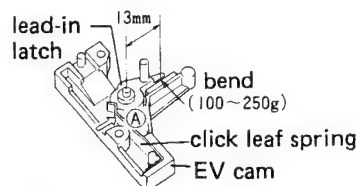
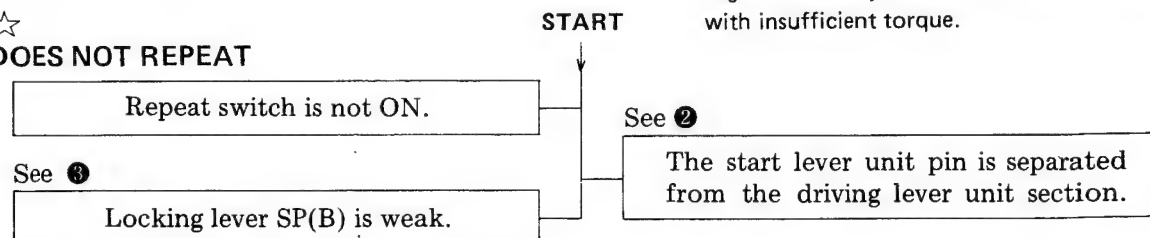


Fig. 1-1 Adjustment of lead-in latch with insufficient torque.

☆ 1.2 DOES NOT REPEAT



Procedure for dealing with item ②

As shown in figure 1-2, if the start lever unit pin is out of line in the direction of ①, repeat will not operate. If it is too far in the direction of ②, the unit will not start. In these cases, assemble referring to the method of joining the panel and bottom panel (lid).

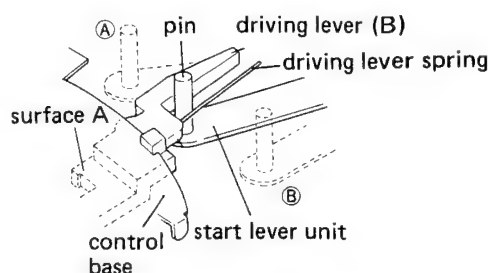


Fig. 1-2 Misaligned pin of start lever unit.

Procedure for dealing with item ③

As shown in figure 1-3, if the locking lever SP(B) is too weak, surfaces A and B of the locking lever will be separated. The spring must then be reworked so that surfaces A and B are always in contact with each other. The repeat function operates normally when driving lever (B), surface A touches surface C of the locking lever and driving lever (B) remains in that position.

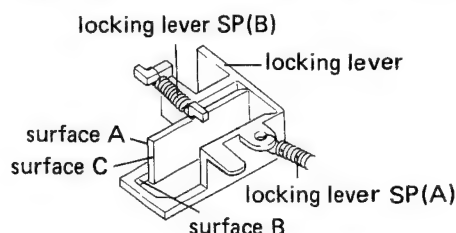


Fig. 1-3 Weak locking lever SP(B)

☆ 1.3 REPEAT FUNCTION IS REPEATED

Separate the panel section and bottom panel and, as shown in figure 1-4, apply a tension of 10g to the start lever unit pin in direction ①. If the repeat function operates, the selector and reset plate sections are not moving properly. If the unit stops, the driving lever (B) is not moving properly.

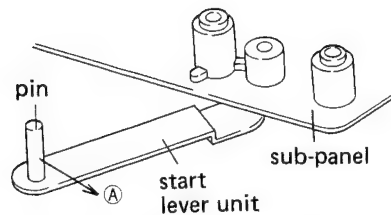
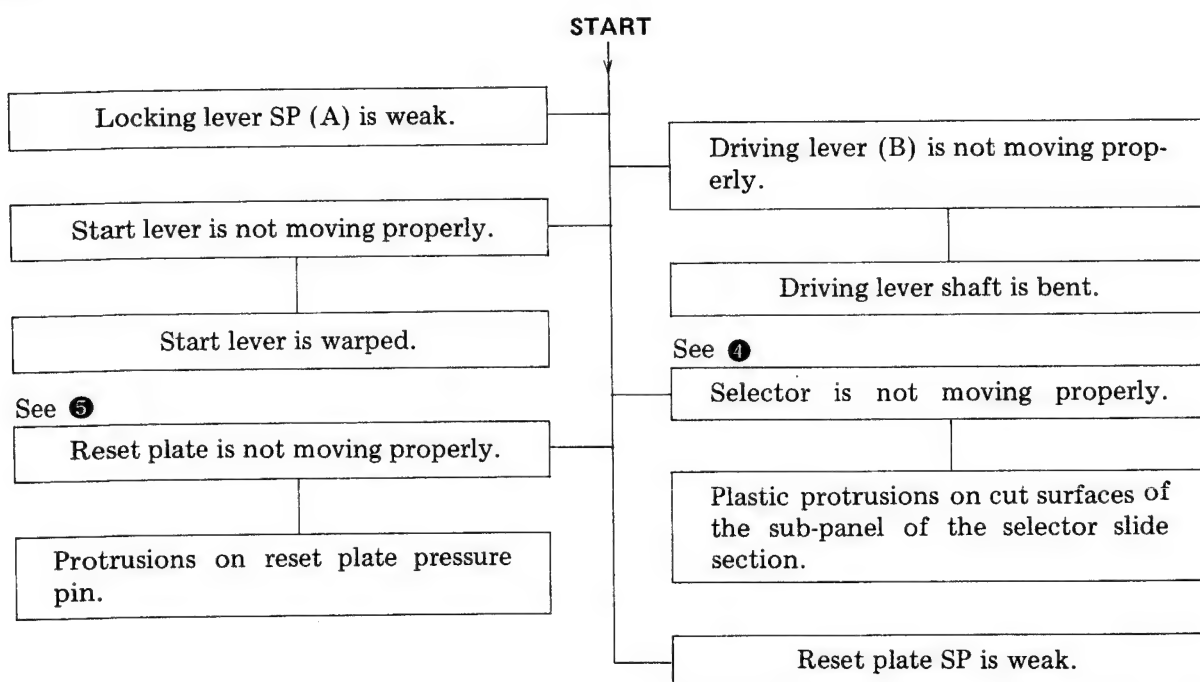


Fig. 1-4 Check of repeat operation.



Procedure for Dealing with Item ④

If there are plastic protrusions remaining from the original-pressing process on surfaces ①, ②, and ③ of the sub-panel which slides with the selector, the movement of the selector will be adversely affected. Therefore, these protrusions must be removed (Fig. 1-5).

Procedure for Dealing with Item ⑤

If there are plastic protrusions on the pressure pin section of section ④ of the reset plate, these protrusions will come in contact with the lower surface of the driving panel when the reset plate moves in direction ⑤ and the movement of the reset plate will be adversely affected. Therefore, these protrusions must be removed (Fig. 1-5).

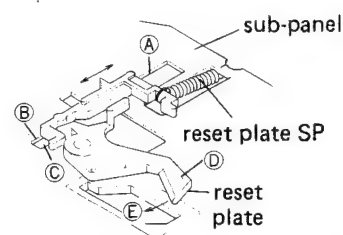
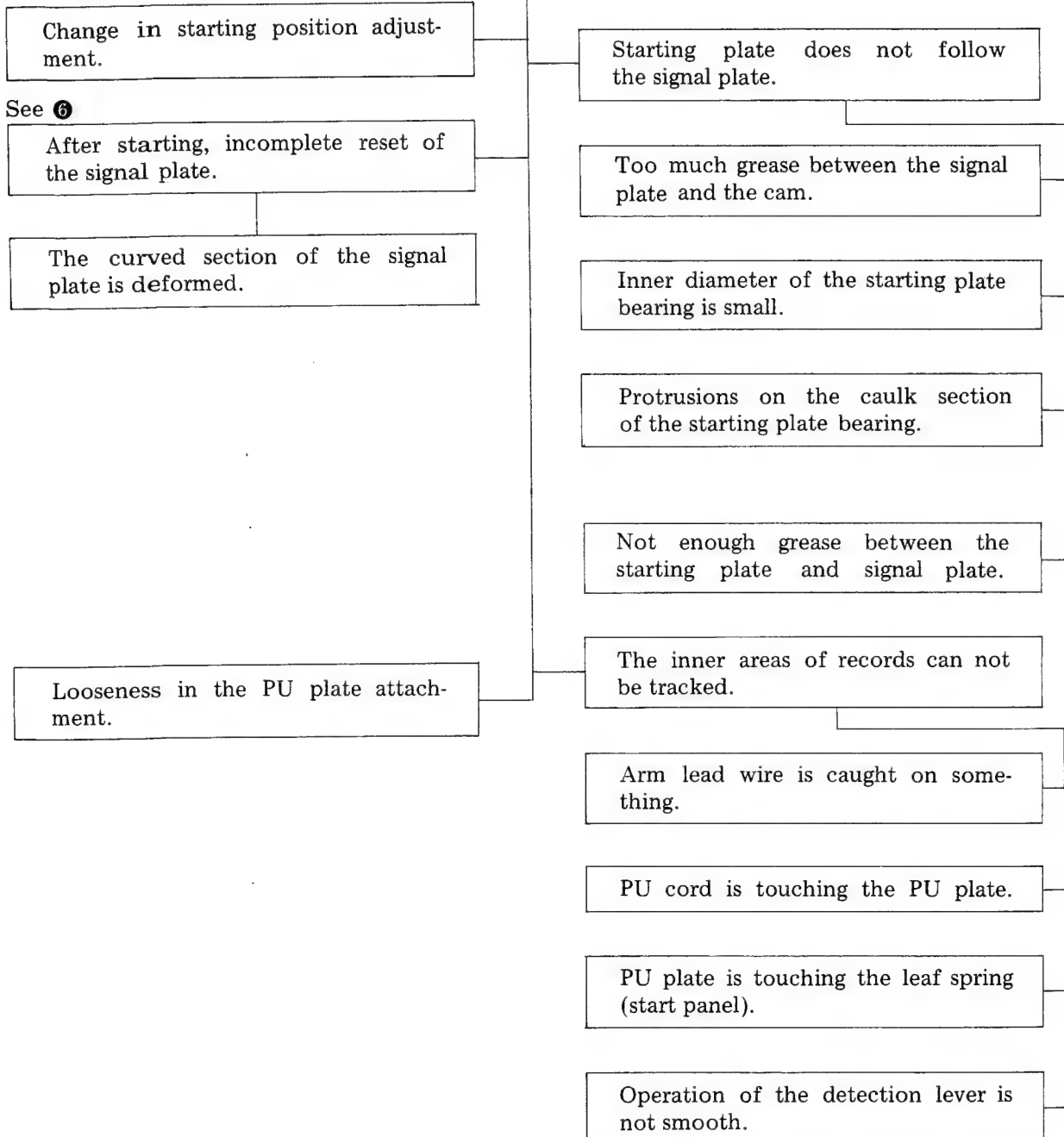


Fig. 1-5 Improper movement of selector.

1.4 AUTO-RETURN DOES NOT WORK

START



Procedure for Dealing with Item ⑥

After performing the return operation, if the curved section of the signal plate and curved section of the starting plate are not in contact with surfaces ① and ② respectively of the cam, reset will be incomplete and the starting position will be late. As a result, the return function may not operate at times. In this case, bend the signal plate ③ so that dimension A is 0.5mm or larger.

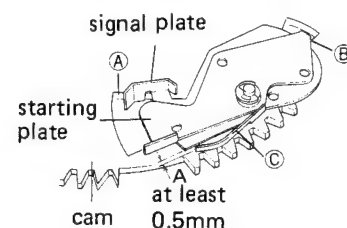


Fig. 1-6 Incomplete reset of starting and signal plates.

1.5 RETURN IS FAST (RETURN AT 1mm PITCH)

See ⑦

Protrusions on the pinion gear section.

Procedure for Dealing with Item ⑦

If there are rough areas of plastic protruding from the ① section of the protruding section of the pinion gear, the return function may operate at a pitch of only 1mm. In this case, remove the plastic protrusions completely (Fig. 1-7).

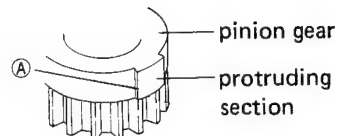
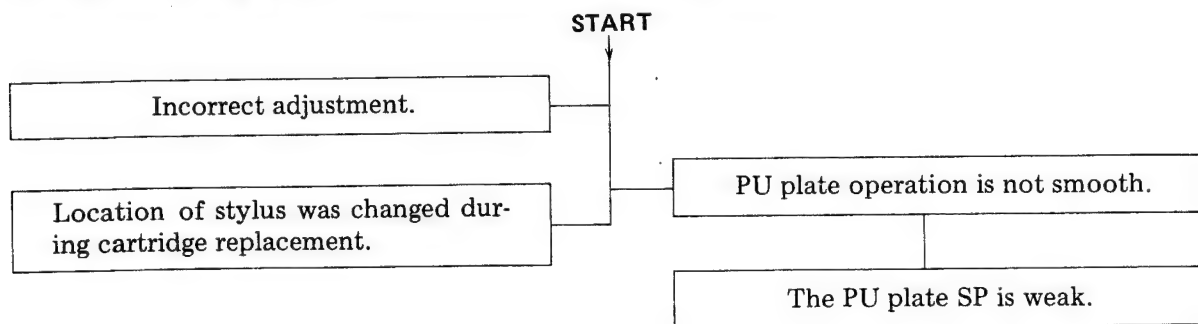


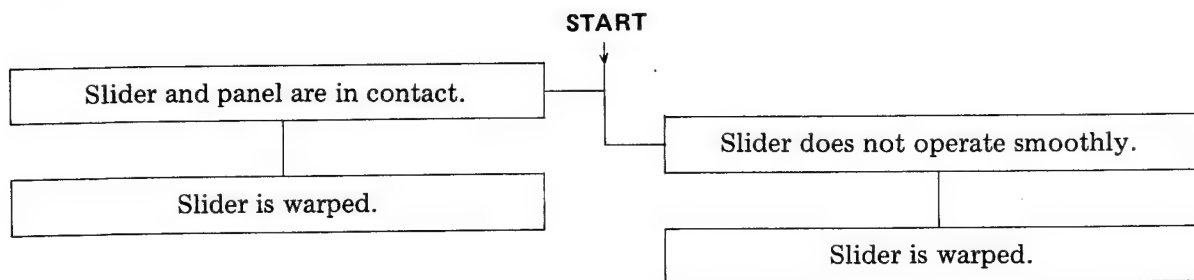
Fig. 1-7 Elimination of pinion gear protrusions.

☆ 1.6 TONEARM DOES NOT LOWER IN CORRECT POSITION

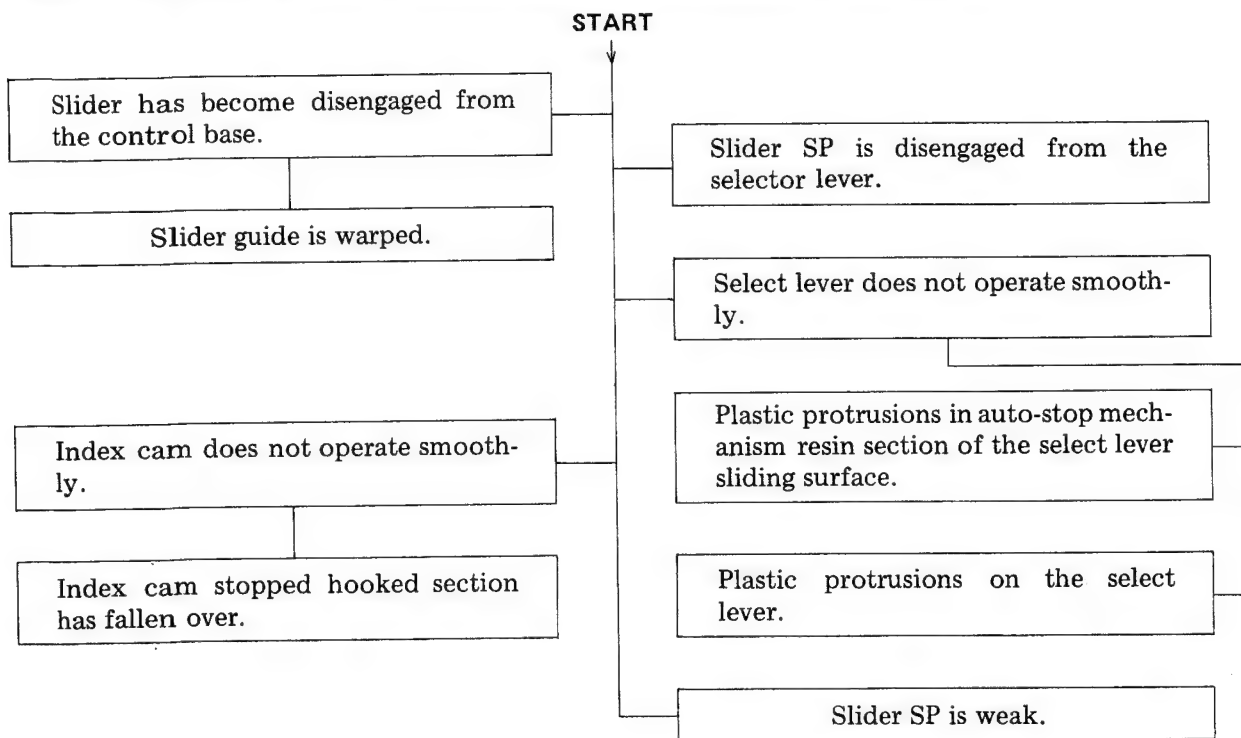


☆ 1.7 RECORD SIZE SELECTOR DOES NOT WORK

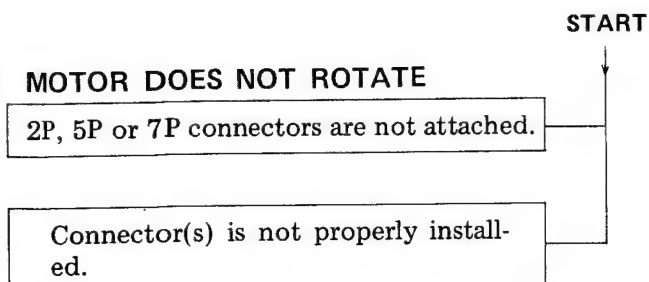
- Tonearm descends at 17cm location when record size selector is set at 30cm.



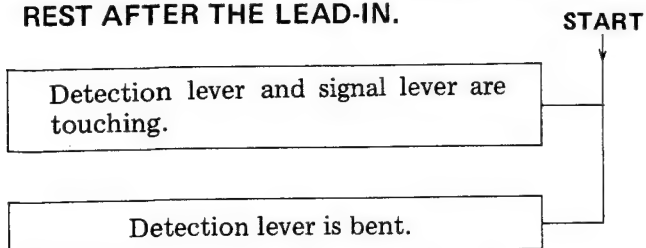
- Tonearm descends at 30cm location when record size selector is set at 17cm.



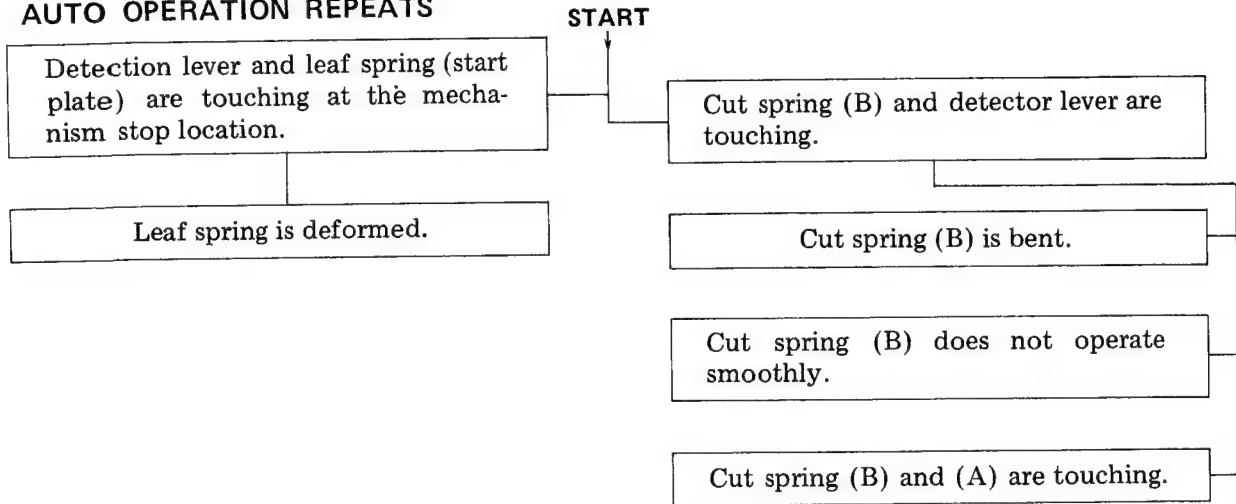
1.8 MOTOR DOES NOT ROTATE



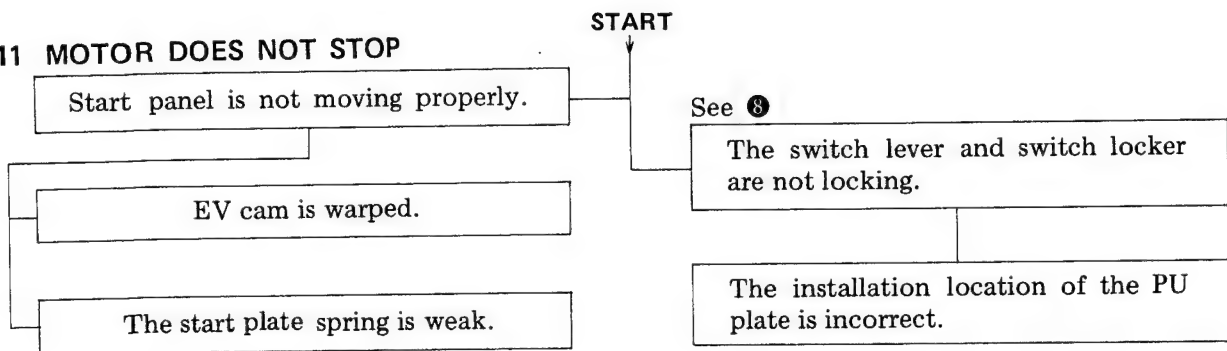
☆ 1.9 WITH THE RECORD SIZE SET AT 17cm, THE TONEARM IS RETURNED TO THE ARM REST AFTER THE LEAD-IN.



☆ 1.10 AUTO OPERATION REPEATS



1.11 MOTOR DOES NOT STOP



Procedure for Dealing with Item ⑧

In order to turn the power OFF, the PU plate shaft touches surface ① of the switch locker pushing it over so it locks with the switch lever turning the micro-switch OFF (fig. 1-8). If the amount of push on the switch locker is insufficient, it can not lock with the switch lever. With the tonearm locked in the arm rest, as shown in figure 1-9, attach the PU plate precisely midway between the first and second points from the arm base scale mark counting away from you (only for auto-return models; for fully automatic models, align with the center point).

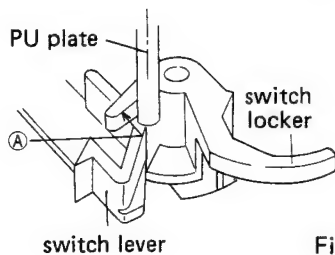


Fig. 1-8

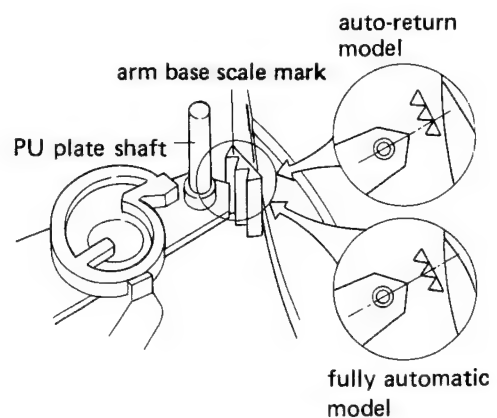


Fig. 1-9 Adjustment of PU plate attachment location

2. PRECAUTIONS FOR REASSEMBLY

Follow these directions and precautions when reassembling a unit after completing repairs. Be sure to lubricate as required, make no mistakes when attaching parts, and avoid all other careless mistakes that may be the cause of trouble later on.

2.1 AREAS THAT REQUIRE LUBRICATION

NOTE:

Types of lubricants and areas where they are used are listed in table 1.

Table 1

Type of Oil	Areas used
Silicon Oil #50000	raising shaft
GYA-008	all other areas

Lubrication points are specified for oils other than GYA-008. Never use a different type of oil.

• Cam Section

Apply oil to the heart-shaped grooved section (rear side of the cam) and lock plate sliding section in order to minimize wear on the sliding section and the burden on the mechanism.

• Driving Plate Assembly

Decrease the burden on the mechanism and the wear on the sliding section.

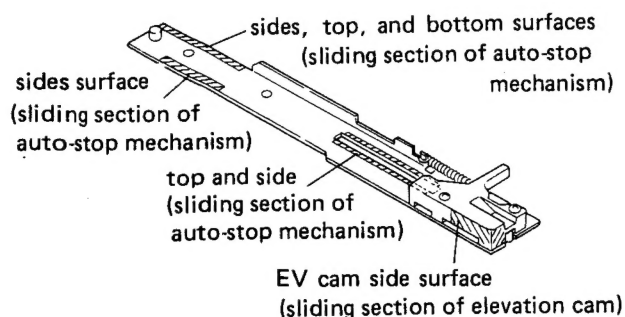


Fig. 2-1 Driving panel assembly section Switch Locker Section

• Switch Locker Section

Apply oil to the switch locker (opening) and sub-panel base sliding section to decrease the burden on the mechanism.

When applying oil to the opening (shaft hole), do not apply any oil 2–3mm from the bottom surface. If oil is applied 2–3mm within the bottom surface, it may come out the bottom and go between the switch lever and sub-panel base causing the switch lever to operate ineffectively.

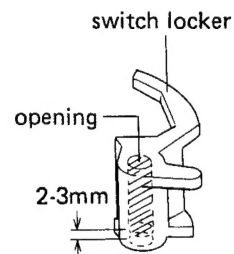


Fig. 2-2 Switch locker section

• Selector Section

Apply oil to the surface of the sub-panel base of the selector sliding section to decrease the burden on the mechanism and wear on the sliding section.

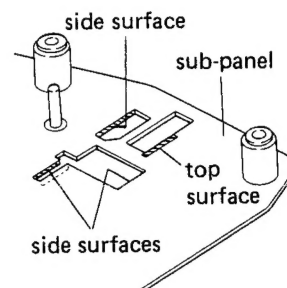


Fig. 2-3 Selector section



• Reset Plate Section

Apply oil to the sub-panel base (shaft) and sliding section of the reset plate to decrease the burden on the mechanism.

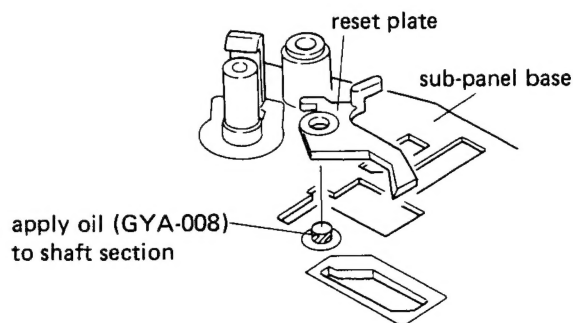


Fig. 2-4 Reset plate section

NOTE:

Indicated ☆ mark applicable to the PL-255, PL-260, PL-400 and PL-400X.



● Index Cam Section

Apply oil to the index cam, sub-panel shaft section, and lower surface of the hooked section to decrease the burden on the mechanism.

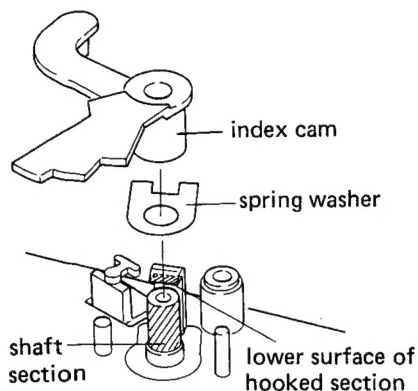


Fig. 2-5 Index cam section

● EV Lever Unit Section

Apply oil to the sliding sections of leaf spring (A) and EV lever unit to decrease the burden on the mechanism.

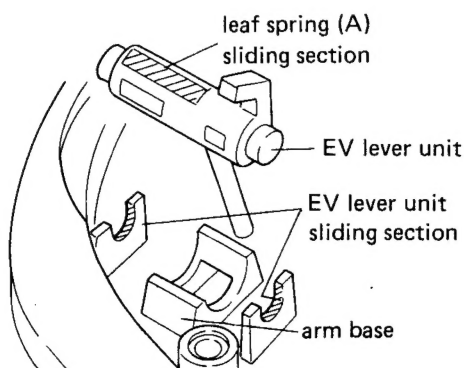


Fig. 2-6 EV lever unit section

● Elevation Cam Section

Apply oil to the elevation cam and sliding section of the raising shaft to decrease the burden when operated.

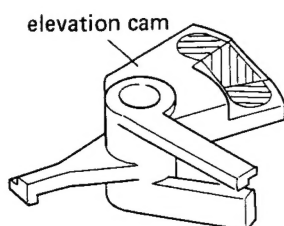


Fig. 2-7 Elevation cam section

● EV Sheet Section

Apply oil to the raising shaft and sliding section of the bearing to assure stability in the elevation lowering speed.

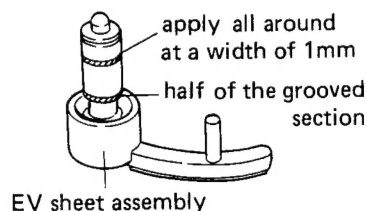


Fig. 2-8 EV sheet section



● Driving Lever (B) Section

Apply oil to the driving lever (B), control base, and the sliding section of the driving lever shaft to decrease the burden when operated.

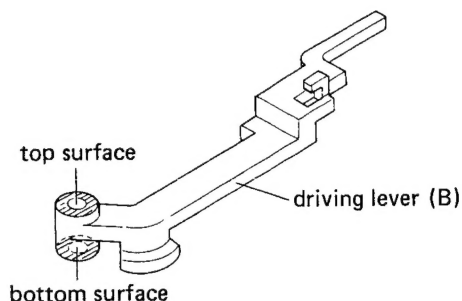


Fig. 2-9 Driving lever (B) section 1

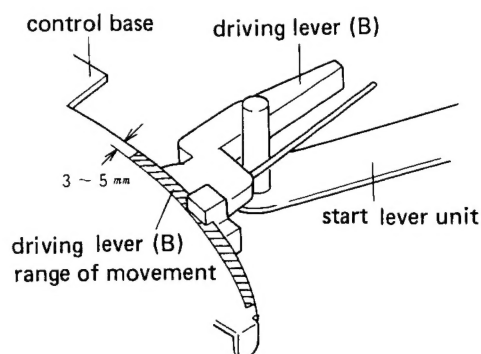


Fig. 2-10 Driving lever (B) section 2

☆ 2.2 PRECAUTIONS FOR ATTACHMENT OF PARTS AND REASSEMBLY

● Reset Plate SP Attachment

As shown in figure 2-11, the reset plate SP hook is attached by putting the open section on the sub-panel base side.

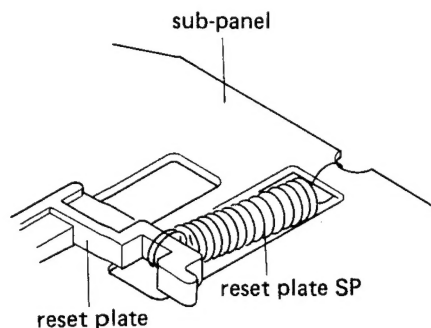


Fig. 2-11 Reset plate SP attachment

● Cam Assembly Attachment

The cam assembly is attached by letting the lock plate go in the direction ① as shown in figure 2-12.

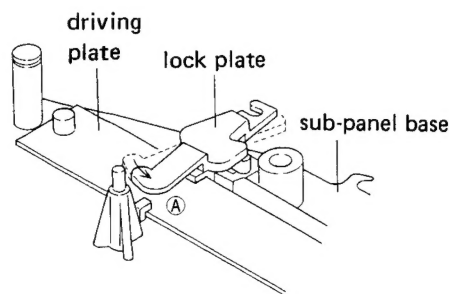


Fig. 2-12 Cam assembly attachment

● Motor Attachment

When installing the motor, set the cam in the mechanism stop location and verify that the starting plate section ② does not protrude beyond surface ① of the cam. If the motor is attached with the starting plate section ② protruding, the starting plate may be deformed, the motor pinion gear may be scratched, and the return function may be damaged.

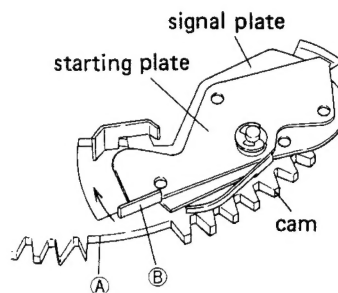


Fig. 2-13 Motor attachment

● PU Plate Attachment

Push the PU plate into place so that the PU plate bearing section touches the revolution shaft attachment nut. Installation direction is as shown in figure 2-14. Note that there is a difference between auto-return and fully automatic models.

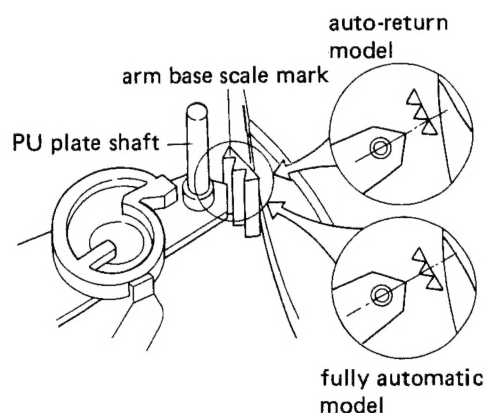


Fig. 2-14 PU plate attachment

● AS Knob Attachment

When installing the AS knob, put the AS knob rib against the AS knob revolution control stopper (attached to the arm base) and affix with the screw. As the stopper may break, be sure to press the AS knob down firmly when installing it.

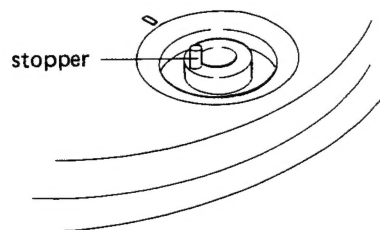


Fig. 2-15 AS knob attachment

- **Arm Base Attachment**

When attaching the arm base section to the mechanism section, put the mechanism section switch locker and switch lever in the locked position and verify that the tonearm is in the arm rest location. Also be sure to put the manual elevation lever in the up position and check that the PU plate shaft is in the position shown in figure 2-16.

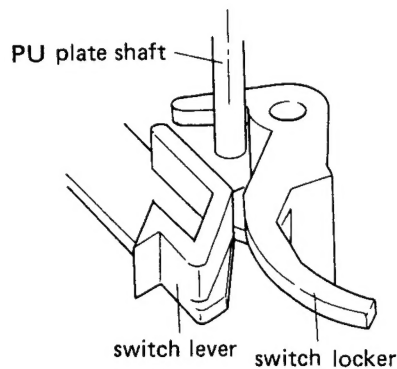


Fig. 2-16 Arm base attachment

- **Wiring the Connector**

When attaching the wires to the 2P connector from the micro-switch, bend the lead wires from the connector housing as shown in figure 2-17 before attaching.

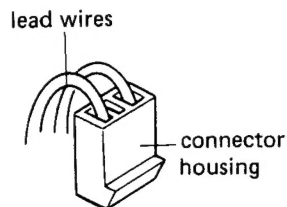


Fig. 2-17 Wiring the connector



- **Start Lever Unit Attachment**

Attach the shaft section of the start lever unit as shown in figure 2-18 so that it comes between the reset plate and start panel.

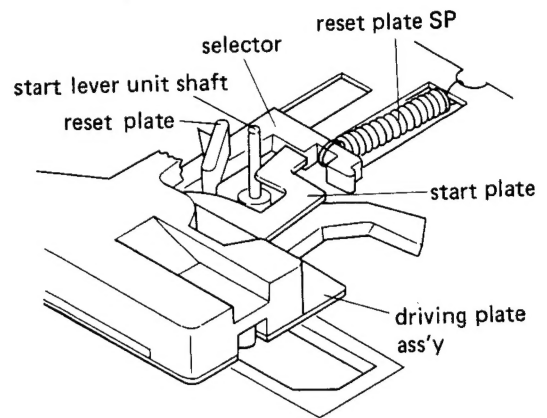


Fig. 2-18 Start lever unit attachment